

## CLAIMS:

1. A method of optimizing a two-dimensional image of a body volume which contains an object, in which method
  - a) a three-dimensional representation of feasible locations of the object within the body volume is acquired;
  - 5 b) the current position of the object is determined and associated with the three-dimensional representation;
  - c) imaging parameters which are optimum in respect of the position of the object are determined by means of the three-dimensional representation, and
  - d) a two-dimensional image of the body volume is generated by means of said  
10 optimum imaging parameters.
2. A method as claimed in claim 1, characterized in that the two-dimensional image is a projection of the body volume which has been generated by means of X-rays.
- 15 3. An imaging system for forming a two-dimensional image of a body volume which contains an object, which system comprises a data processing unit with a memory which stores a three-dimensional representation of feasible locations of the object within the body volume, the data processing unit being arranged
  - a) to determine imaging parameters which are optimum in respect of the  
20 current position of the object by means of the three-dimensional representation;
  - b) to control the imaging system in such a manner that it generates a two-dimensional image with said imaging parameters.
4. An imaging system as claimed in claim 3, characterized in that it includes an  
25 X-ray apparatus with an X-ray source and a detector which are attached to a movable C-arm.
5. An imaging system as claimed in claim 4, characterized in that the X-ray apparatus includes adjustable diaphragms whose adjustment forms part of the imaging parameters optimized by the data processing unit.

6. An imaging system as claimed in claim 3, characterized in that the data processing unit is coupled to signal leads, notably for an ECG, of a respiration sensor and/or of a localizing device for the object.

5

7. An imaging system as claimed in claim 3, characterized in that it is arranged to determine the current position of the object from a two-dimensional image.

8. An imaging system as claimed in claim 3, characterized in that the imaging parameters define a sectional plane, a projection direction, the position of a radiation source, the position of an imaging radiation detector, the shape of an imaging window, the position of radiation-attenuating diaphragm elements, variances in the radiation field across an irradiated surface, a radiation quality, a radiation intensity, the current and/or the voltage of a radiation source and/or an exposure time.

15

9. An imaging system as claimed in claim 3, characterized in that the feasible locations of the object are vessels within a biological body volume, and that the data processing unit is arranged to define the optimum imaging parameters in such a manner that the segment of the vascular tree in which the object is situated is projected essentially in a planar fashion in the two-dimensional image.

20

10. An imaging system as claimed in claim 3, characterized in that it includes a device for the formation of images and is arranged to display the two-dimensional image in superposed form together with an image formed from the three-dimensional representation with completely the same or partly the same imaging parameters, the image formed from the three-dimensional representation preferably reproducing an area which is larger than that reproduced by the two-dimensional image.

25